

REMARKS

Claims 13-16 are pending in the subject application. By the instant amendment, claims 13-16 are amended to more particularly recite the subject matter of the present invention. Claim 13 is the sole independent claim. No new matter is added by the instant amendment, as support for the instant amendment may be found in the drawing figures as originally filed.

The specification is amended to maintain consistency with the claimed subject matter in the subject application.

Applicants appreciate the Examiner's acknowledgement of applicants' claim for foreign priority and receipt of a certified copy of the priority document in connection with parent application, Serial No. 10/103,756.

Applicants appreciate the Examiner's acceptance of the drawings filed on December 8, 2003.

Claims 13-16 are presented to the Examiner for further prosecution on the merits.

A. Introduction

In the outstanding Office action, the Examiner rejected claims 13-16 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,506,650 to Yu ("the Yu reference") in view of U.S. Patent No. 6,440,875 to Chan et al. ("the Chan et al. reference") further in view of Microchip Fabrication: A Practical Guide to Semiconductor Processing by Peter Van Zant ("the Van Zant reference").

B. Asserted Obviousness Rejection of Claims 13-16

Applicants respectfully submit that the subject invention, as presently claimed, is patentably distinct from the combination of the disclosures of the cited prior art references. Specifically, the combination of prior art references fails to disclose or suggest "a medium-concentration junction area formed to a second depth in the substrate and positioned between the

high- and low-concentration junction areas and beyond the vertical sidewall portion of the L-shaped upper spacer,” as presently recited in claim 13.

In the Yu reference, a deep implantation area 42, a shallow implantation area 44 and a transition area therebetween are formed by a deep implantation process 40 using an L-shaped spacer 36, which includes an upper spacer 28 and a lower spacer 26, as an ion mask. *See the Yu reference at col. 3, lines 51-54.* Resultantly, the shallow implantation 44 is beneath the gate electrode, the deep implantation 42 is beneath the source/drain contact regions, and the transition area is therebetween. The Examiner compares the transition area of the Yu reference to the medium-concentration junction area 182 of the present invention.

As a result of the method of the Yu reference, there is a shallow implantation 44 under the gate stack 14, the vertical sidewall and a portion of the horizontal protruding portion of the lower spacer 26, and a portion of the vertical sidewall of the upper spacer 28. The transition area is formed under the vertical sidewall and the horizontal protruding portion of the upper spacer 28. The deep implantation 42 is formed beyond the horizontal protruding portions of both the upper and lower spacers 28 and 26. *See the Yu reference at col. 3, line 67 - col. 4, line 4 and FIG. 6.*

On the contrary, in the present invention, the medium-concentration junction area 182 is not formed using either the upper or lower spacer 142 or 131 of the final structure as an ion mask. Rather, the medium-concentration junction area 182 and a high-concentration junction area 180 are formed by an ion implantation process using an interim spacer, viz., a second spacer 151, as an ion mask. Accordingly, the medium-concentration junction area 182 is not aligned with the upper spacer 142, as in the Yu reference.

In the present invention, the medium-concentration junction area 182 and a low-concentration junction area 190 are formed under the upper spacer 142 of the final structure.

The low-concentration junction area 190 is formed under the vertical sidewall portion of the upper spacer 142 and a portion of the horizontal protruding portion of the upper spacer 142. The low-concentration junction 190 is formed beyond the vertical sidewall of the lower spacer 131. The medium-concentration junction area 182 is formed adjacent to the low-concentration junction area 190 under the remaining portion of the horizontal protruding portion of the upper spacer 142. Accordingly, due to the position of the low-concentration junction area 190, the medium-concentration junction area 182 is formed beyond the vertical sidewall of the upper spacer 142, as may be seen in FIG. 10.

This distinction is further demonstrated by comparing a width of the transition area to a width of the upper spacer 28 in the Yu reference and a width of the medium-concentration junction area 182 to a width of the upper spacer 142 in the subject application. In the Yu reference, the transition area has a width substantially the same as a width of the upper spacer. *See FIG. 6 of the Yu reference.* On the contrary, in the present invention, the medium-concentration junction area 182 has a width that is less than a width of the upper spacer 142. *See FIG. 10 of the subject application.*

The remaining cited prior art references, viz., the Chan et al. and Van Zant references, similarly fail to disclose or suggest a medium-concentration junction area, as recited in claim 13 of the present invention.

In view of the above distinction between the subject invention as presently claimed and the cited prior art reference, independent claim 13 is believed to be in condition for allowance, and a notice to that effect is respectfully requested.

Further, because the remaining claims, claims 14-16, depend, either directly or indirectly, from claim 13, claims 14-16 are believed to be similarly allowable as depending from an allowable base claim.

Accordingly, reconsideration and withdrawal of the rejections of claims 13-16 are respectfully requested.

C. Conclusion

Since the combination of cited prior art references neither anticipates nor renders obvious the subject invention as presently claimed, applicants respectfully submit that claims 13-16 are now in condition for allowance, and a notice to that effect is respectfully requested.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,

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If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.